

Federal Communications Commission

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MAXIMUM ALLOWABLE ERP AND ANTENNA HEIGHT FOR DTV STATIONS ON CHANNELS 14–59, ALL ZONES

Antenna HAAT (meters)	ERP (kW)
610	316
580	350
550	400
520	460
490	540
460	630
425	750
395	900
365	1000

(ii) For DTV stations located in Zone I, II or III that operate on channels 14–59 with an HAAT that exceeds 610 meters, the allowable maximum ERP expressed in decibels above 1 kW (dBk) is determined using the following formula, with HAAT expressed in meters:

$$ERP_{\max} = 72.57 - 17.08 \log_{10}(\text{HAAT})$$

(g) *DTV stations operating on channels above an analog TV station.* (1) DTV stations operating on a channel allotment designated with a “c” in paragraph (b) of this section must maintain the pilot carrier frequency of the DTV signal 5.082138 MHz above the visual carrier frequency of any analog TV broadcast station that operates on the lower adjacent channel and is located within 88 kilometers. This frequency difference must be maintained within a tolerance of ± 3 Hz.

(2) Unless it conflicts with operation complying with paragraph (g)(1) of this section, where a low power television station or TV translator station is operating on the lower adjacent channel within 32 km of the DTV station and notifies the DTV station that it intends to minimize interference by precisely maintaining its carrier frequencies, the DTV station shall cooperate in locking its carrier frequency to a common reference frequency and shall be responsible for any costs relating to its own transmission system in complying with this provision.

(h)(1) The power level of emissions on frequencies outside the authorized channel of operation must be attenuated no less than the following amounts below the average transmitted power within the authorized channel. In the first 500 kHz from the channel edge the emissions must be attenuated no less than 47 dB. More than 6 MHz from the channel edge, emis-

sions must be attenuated no less than 110 dB. At any frequency between 0.5 and 6 MHz from the channel edge, emissions must be attenuated no less than the value determined by the following formula:

Attenuation in dB = $-11.5(\Delta f + 3.6)$;

Where: Δf = frequency difference in MHz from the edge of the channel.

(2) This attenuation is based on a measurement bandwidth of 500 kHz. Other measurement bandwidths may be used as long as appropriate correction factors are applied. Measurements need not be made any closer to the band edge than one half of the resolution bandwidth of the measuring instrument. Emissions include sidebands, spurious emissions and radio frequency harmonics. Attenuation is to be measured at the output terminals of the transmitter (including any filters that may be employed). In the event of interference caused to any service, greater attenuation may be required.

[62 FR 26712, May 14, 1997, as amended at 63 FR 13552, Mar. 20, 1998; 64 FR 47702, Sept. 1, 1999]

§ 73.623 DTV applications and changes to DTV allotments.

(a) *General.* This section contains the technical criteria for evaluating applications requesting DTV facilities that do not conform to the provisions of § 73.622 and petitions for rule making to amend the DTV Table of Allotments (§ 73.622(b)). Petitions to amend the DTV Table (other than those also expressly requesting amendment of this section) and applications for new DTV broadcast stations or for changes in authorized DTV stations filed pursuant to this section will not be accepted for filing if they fail to comply with the requirements of this section.

(b) In considering petitions to amend the DTV Table and applications filed pursuant to this section, the Commission will use geographic coordinates defined in § 73.622(d) as reference points in determining allotment separations and evaluating interference potential.

(c) *Minimum technical criteria for modification of DTV allotments included in the initial DTV Table of Allotments and for applications filed pursuant to this section.* No petition to modify a channel allotment included in the initial DTV Table

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of Allotments or application for authority to construct or modify a DTV station assigned to such an allotment, filed pursuant to this section, will be accepted unless it shows compliance with the requirements of this paragraph.

(1) Requests filed pursuant to this paragraph must demonstrate compliance with the principal community coverage requirements of section 73.625(a).

(2) Requests filed pursuant to this paragraph must demonstrate that the requested change would not result in more than an additional 2 percent the population served by another station being subject to interference; provided, however, that no new interference may be caused to any station that already experiences interference to 10 percent or more of its population or that would result in a station receiving interference in excess of 10 percent of its population. The station population values for existing NTSC service and DTV service contained in Appendix B of the *Memorandum Opinion and Order on Reconsideration of the Sixth Report and Order* in MM Docket No. 87–268, FCC 98–24, adopted January 29, 1998, referenced in § 73.622(c), are to be used for the purposes of determining whether a power increase or other change is permissible under this de minimis standard. For evaluating compliance with this requirement, interference to populations served is to be predicted based on the procedure set forth in *OET Bulletin No. 69*, including population served within service areas determined in accordance with section 73.622(e), consideration of whether $F(50,10)$ undesired signals will exceed the following desired-to-undesired (D/U) signal ratios, assumed use of a directional receiving antenna, and use of the terrain dependent Longley-Rice point-to-point propagation model. Copies of *OET Bulletin No. 69* may be inspected during normal business hours at the: Federal Communications Commission, 1919 M St., NW., Dockets Branch (Room 239), Washington, DC 20554. These documents are also available through the Internet on the *FCC Home Page* at <http://www.fcc.gov>. The threshold levels at which interference is considered to occur are:

	D/U Ratio
Co-channel:	
DTV-into-analog TV	+34
Analog TV-into-DTV	+2
DTV-into-DTV	+15
First Adjacent Channel:	
Lower DTV-into-analog TV	–14
Upper DTV-into-analog TV	–17
Lower analog TV-into-DTV	–48
Upper analog TV-into-DTV	–49
Lower DTV-into-DTV	–28
Upper DTV-into-DTV	–26
Other Adjacent Channel (Channels 14–69 only)	
DTV-into-analog TV, where N = analog TV channel and DTV Channel:	
N–2	–24
N+2	–28
N–3	–30
N+3	–34
N–4	–34
N+4	–25
N–7	–35
N+7	–43
N–8	–32
N+8	–43
N+14	–33
N+15	–31

(3) The values in paragraph (c)(2) of this section for co-channel interference to DTV service are only valid at locations where the signal-to-noise ratio is 28 dB or greater for interference from DTV and 25 dB or greater for interference from analog TV service. At the edge of the noise-limited service area, where the signal-to-noise (S/N) ratio is 16 dB, these values are 21 dB and 23 dB for interference from analog TV and DTV, respectively. At locations where the S/N ratio is greater than 16 dB but less than 28 dB, D/U values for co-channel interference to DTV are as follows:

(i) For DTV-to-DTV interference, the minimum D/U ratios are computed from the following formula:

$$D/U = 15 + 10 \log_{10} [1.0 / (1.0 - 10^{-x/10})]$$

Where $x = S/N - 15.19$ (minimum signal to noise ratio)

(ii) For analog-to-DTV interference, the minimum D/U ratios are found from the following Table (for values between measured values, linear interpolation can be used):

Signal-to-noise ratio (dB)	Desired-to-undesired ratio (dB)
16.00	21.00
16.35	19.94
17.35	17.69
18.35	16.44
19.35	7.19
20.35	4.69

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Signal-to-noise ratio (dB)	Desired-to-undesired ratio (dB)
21.35	3.69
22.35	2.94
23.35	2.44
25.00	2.00

(4) Due to the frequency spacing that exists between Channels 4 and 5, between Channels 6 and 7, and between Channels 13 and 14, the minimum adjacent channel technical criteria specified in paragraph (c)(2) of this section shall not be applicable to these pairs of channels (see § 73.603(a)).

(d) *Minimum geographic spacing requirements for DTV allotments not in-*

cluded in the initial DTV Table of Allotments. No petition to add a new channel to the DTV Table of Allotments or modify an allotment not included in the initial DTV Table will be accepted unless it shows compliance with the requirements of this paragraph.

(1) Requests filed pursuant to this paragraph must demonstrate compliance with the principle community coverage requirements of section 73.625(a).

(2) Requests filed pursuant to this paragraph must meet the following requirements for geographic spacing with regard to all other DTV stations, DTV allotments and analog TV stations:

Channel relationship	Separation requirement
VHF Channels 2–13: Co-channel, DTV to DTV	Zone I: 244.6 km. Zones II & III: 273.6 km.
Co-channel, DTV to analog TV	Zone I: 244.6 km. Zone II & III: 273.6 km.
Adjacent Channel: DTV to DTV	No allotments permitted between: Zone I: 20 km and 110 km. Zones II & III: 23 km and 110 km.
DTV to analog TV	No allotments permitted between: Zone I: 9 km and 125 km. Zone II & III: 11 km and 125 km.
UHF Channels: Co-channel, DTV to DTV	Zone I: 196.3 km. Zone II & III: 223.7 km.
Co-channel, DTV to analog TV	Zone I: 217.3 km. Zone II & III: 244.6 km.
Adjacent Channel: DTV to DTV	No allotments permitted between: All Zones: 24 km and 110 km.
DTV to analog TV	No allotments permitted between: All Zones: 12 km and 106 km.
Taboo Channels, DTV to analog TV only (DTV channels +/–2, +/–3, +/–4, +/–7, +/–8, and 14 or 15 channels above the analog TV channel).	No allotments permitted between: Zone I: 24.1 km and 80.5 km. Zone II & III: 24.1 km and 96.6 km.

(3) Zones are defined in § 73.609. The minimum distance separation between a DTV station in one zone and an analog TV or DTV station in another zone shall be that of the zone requiring the lower separation.

(4) Due to the frequency spacing that exists between Channels 4 and 5, between Channels 6 and 7, and between Channels 13 and 14, the minimum geographic spacing requirements specified in paragraph (d)(3) of this section shall not be applicable to these pairs of channels (§ 73.603(a)).

(e) *Protection of land mobile operations on channels 14–20.* The Commission will not accept petitions to amend the DTV Table of Allotments, applications for new DTV stations, or applications to change the channel or location of authorized DTV stations that would use channels 14–20 where the distance between the DTV reference point as defined in section 73.622(d), would be located less than 250 km from the city center of a co-channel land mobile operation or 176 km from the city center

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of an adjacent channel land mobile operation. Petitions to amend the DTV Table, applications for new DTV stations, or requests to modify the DTV Table that do not meet the minimum DTV-to-land mobile spacing standards

will, however, be considered where all affected land mobile licensees consent to the requested action. Land mobile operations are authorized on these channels in the following markets:

City	Channels	Latitude	Longitude
Boston, MA	14, 16	42°21'24"	71°03'25"
Chicago, IL	14, 15	41°52'28"	87°38'22"
Dallas, TX	16	32°47'09"	96°47'37"
Houston, TX	17	29°45'26"	95°21'37"
Los Angeles, CA	14, 16, 20	34°03'15"	118°14'28"
Miami, FL	14	25°46'37"	80°11'32"
New York, NY	14, 15	40°45'06"	73°59'39"
Philadelphia, PA	19, 20	39°56'58"	75°09'21"
Pittsburgh, PA	14, 18	40°26'19"	80°00'00"
San Francisco, CA	16, 17	37°46'39"	122°24'40"
Washington, DC	17, 18	38°53'51"	77°00'33"

(f) Parties requesting new allotments on channel 6 be added to the DTV Table must submit an engineering study demonstrating that no interference would be caused to existing FM radio stations on FM channels 200–220.

(g) *Negotiated agreements on interference.* Notwithstanding the minimum technical criteria for DTV allotments specified above, DTV stations operating on allotments that are included in the initial DTV Table may: operate with increased ERP and/or antenna HAAT that would result in additional interference to another DTV station or an analog TV station if that station agrees, in writing, to accept the additional interference; and/or implement an exchange of channel allotments between two or more licensees or permittees of TV stations in the same community, the same market, or in adjacent markets provided, however, that the other requirements of this section and of section 73.622 are met with respect to each such application. Such agreements must be submitted with the application for authority to construct or modify the affected DTV station or stations. The larger service area resulting from a negotiated change in ERP and/or antenna HAAT will be protected in accordance with the provisions of paragraph (c) of this section. Negotiated agreements under this paragraph can include the exchange of money or other considerations from one station to another, including payments to and from non-commercial television stations as-

signed reserved channels. Applications submitted pursuant to the provisions of this paragraph will be granted only if the Commission finds that such action is consistent with the public interest.

[62 FR 26719, May 14, 1997, as amended at 63 FR 13560, Mar. 20, 1998; 64 FR 4327, Jan. 28, 1999]

§ 73.624 Digital television broadcast stations.

(a) Digital television ("DTV") broadcast stations are assigned channels 6 MHz wide. Initial eligibility for licenses for DTV broadcast stations is limited to persons that, as of April 3, 1997, are licensed to operate a full power television broadcast station or hold a permit to construct such a station (or both).

(b) At any time that a DTV broadcast station permittee or licensee transmits a video program signal on its analog television channel, it must also transmit at least one over-the-air video program signal at no direct charge to viewers on the DTV channel that is licensed to the analog channel, *provided* that, before the date on which DTV station is required to be constructed under paragraph (d) of this section, the DTV broadcast station permittee or licensee is not subject to any minimum schedule for operation on the DTV channel. The DTV service that is provided pursuant to this paragraph must be at least comparable in resolution to the analog television station programming transmitted to viewers on the